BCS
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subject: **Patent Submission – Method of Switching in ATM Networks**

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TO: BCS-New Jersey Patent Committee
HO 3K-214

SUBJECT OF SUBMISSION:

A method that allows interconnection of private ATM networks over a public ATM facility using SVC-s (Switched Virtual Connections).

OBJECTIVE:

(What overall problem does the proposal solve or what purpose does it serve?)

The objective of the proposal is to allow organizations to deploy SVC based ATM LAN-s and WAN-s today in a private line or public network PVC/PVP environment, and avoid readdressing of their ATM network when they decide to use public ATM switched services.

BRIEF DESCRIPTION:

(1. What is it? 2. How does it operate? Rely on attachments for detailed description.)

Problem

ATM services currently are PVC (Permanent Virtual Connection) based, although some carriers already offer SVC services. In the future it is expected SVC-s will be widely used for backup, for adding additional bandwidth (bandwidth on demand), communication with small sites, and for intercompany communications (although Internet may be a better candidate for that). Switched access requires additional security since the availability of switched access over ATM opens the door to hackers. Users who use ATM LAN/WAN configurations, (LANE, MPOA or proprietary) interconnect geographically dispersed sites over private lines, or public ATM service PVP (Permanent Virtual Path) connections with SVC tunneling. Routing is accomplished using dynamic routing protocols e.g., PNNI. Addressing in an ATM network is difficult to manage, the administrator has to type 40 character addresses. Once the addressing is set (the allocation of ATM addresses is not well defined, and early adapters may pick their own addresses that may not be unique) it is

very expensive to change the addressing scheme. If migrating to SVC service becomes economical, the public service provider must assign its own unique ATM addresses and routing in the public domain is done based on those addresses. The amount of work required to change existing addressing may turn out to be prohibitive.

Solution

The ATM UNI signaling protocol provides two information elements Calling Party Subaddress and Called Party Subaddress that can be used for this purpose. The proposal calls for an ATM switch application/feature to do the following:

- The switch must run PNNI as the routing protocol
- Accepts an ATM address in any format (DCC, ICD, E-164) assigned to the port/interface connected to the public service (we may call it Public Border Node-PBN)
- All the other interfaces and all hosts in the network have the internal (to the organization) DCC, ICD, or E-164 addresses assigned
- Switches interfacing the public network accept a static route at a cost (and optionally QoS) defined by the administrator
- Hosts connected to the network are not aware of the public ATM network and use only the internal addresses in their SETUP messages
- The preferred routing is source routing
- Each switch computes its route, and the Designated Transition List (DTL)
- A non-PBN switch includes the destination address of the called party in both the Called Party Address and the Called Party Subaddress Information Elements. For added security the Called Party Subaddress Information Element should be encrypted.
- If the call reaches a PBN, and the PBN decides that it must be routed over a public SVC (SVC or SVPC), this switch will substitute the Called Party Address with the **public network address** of the far end PBN switch, and sends the SETUP message with the Called Party Subaddress unchanged..
- Upon the reception of a call with both the Called Party Address and the Called Party Subaddress the PBN substitutes the public address with the decrypted address in the received Called Party Subaddress Information Element (if the address passes an optional security check) and routes the call as required.
- If a PBN receives a call with no or unknown Called Party Subaddress, and the AAL Parameters IE =AAL5 , the switch will assume that this is from a third party and automatically connects the call to a designated RAS (Remote Access Server) – this

feature is optional and relies on the assumption, that the third party knows the IP address of this RAS. Otherwise the switch will clear the call.

COMPARISON:

(1. What similar things are already known or available? 2. What are the differences of your proposal? 3. What commercial benefits are derived from these differences?)

The benefits of this proposal:

- Users can implement ATM networks now, and not worry about addressing in public networks

USE:

1. What is the probability of commercial use? By LUCENT? By others?

There are Lucent products that could use it, like the MX1000 and the AC120.

2. Is it scheduled for use in a LUCENT product or service? Which one, and when?

I have no knowledge of such a product.

3. Is this idea likely to be adopted by others outside of LUCENT? If so, why and to what extent?

Yes.

4. Is it likely to become a standard?

Don't know

5. Do you see applications for the idea other than the one described above?)

No

ECONOMIC IMPACT:

(1. What is the expected annual sales volume or revenue of products or services of (a) LUCENT (b) overall marketplace, to which this proposal applies, if used?)

It will enhance the Lucent ATM products with a feature that other products don't offer. Competitive edge.

FOREIGN INTEREST:

(1. In which foreign countries, if any, should we obtain a patent? Why (e.g., big market there; major competitors are based there)?)

ORIGINATORS OF THE PROPOSAL:

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Attachments:

(Method of switching in ATM networks)